

WHAT IS CLAIMED IS:

1. An outboard motor comprising a drive unit and a bracket assembly arranged to support the drive unit for pivotal movement about a steering axis, the drive unit moving between first and second steering positions, the drive unit comprising a prime mover, a propulsion device powered by output of the prime mover, a regulating device arranged to move between first and second regulating positions so as to regulate the output of the prime mover, a transmission arranged to move between first and second shift positions so as to set the propulsion device to one of at least first or second mode, a first actuator arranged to move the drive unit between the first and second steering positions, a second actuator arranged to move the regulating device between the first and second regulating positions, a third actuator arranged to move the transmission between the first and second shift positions, an operating device configured to generate a first control command corresponding to a specific steering position between the first and second steering positions, a second control command corresponding to a specific regulating position between the first and second regulating positions and a third control command corresponding to either the first or second shift position, the operating device having multiple physical positions, the first, second and third control commands selectively generated in response to the physical positions, and a control device configured to control the first, second and third actuators based upon the first, second and third commands, respectively.

2. The outboard motor as set forth in Claim 1, wherein the operating device is disposed on the bracket assembly.

3. The outboard motor as set forth in Claim 2, wherein a support member extends from the bracket assembly, the operating device is affixed to the support member.

4. The outboard motor as set forth in Claim 3, wherein the support member comprises at least first and second sections, the first section is detachable from the second section, the operating device is affixed to the first section.

5. The outboard motor as set forth in Claim 3, wherein the support member is collapsible.

6. The outboard motor as set forth in Claim 3, wherein the operating device comprises a stick configured to swing relative to the support member.

7. The outboard motor as set forth in Claim 6, wherein the stick swings back and forth and right and left.

8. The outboard motor as set forth in Claim 7, wherein a right and left swing of the stick gives the first command, a back and forth swing of the stick gives the third command, and a swing amount of the back and forth swing gives the second command.

9. The outboard motor as set forth in Claim 3 additionally comprising a stop device that inhibits the prime mover from further operating, the stop device is disposed on the support member.

10. The outboard motor as set forth in Claim 1, wherein the operating device swings right and left and back and forth to change the physical positions.

11. The outboard motor as set forth in Claim 10, wherein a right and left swing of the operating device gives the first command, a back and forth swing of the operating device gives the third command, and a swing amount of the back and forth swing gives the second command.

12. The outboard motor as set forth in Claim 1, wherein the bracket assembly comprises a clamping bracket and a swivel bracket, the clamping bracket adapted to be mounted on an associated watercraft and support the swivel bracket for pivotal movement about a tilt axis that extends generally horizontally, the swivel bracket supporting the drive unit for the pivotal movement about the steering axis that extends generally vertically.

13. The outboard motor as set forth in Claim 12, wherein the bracket assembly additionally comprises a hydraulic device connected to the drive unit, the first actuator operates the hydraulic device.

14. The outboard motor as set forth in Claim 1, wherein the prime mover is an internal combustion engine, the regulating device is a throttle valve that regulates an amount of air to a combustion chamber of the engine, the second actuator operates the throttle valve.

15. The outboard motor as set forth in Claim 1, wherein the prime mover has an output shaft, the propulsion device has a propulsion shaft, the transmission couples the output shaft with the propulsion shaft.

16. The outboard motor as set forth in Claim 15, wherein the transmission comprises a first gear coupled with the output shaft, second and third gears both meshing the first gear and are selectively coupled with the propulsion shaft, and a clutch unit engaging either the second or third gear, the second gear is coupled with the propulsion shaft when the clutch unit engages the second gear, the third gear is coupled with the propulsion shaft when the clutch unit engages the third gear, the propulsion device is set

to the first mode when the second gear is coupled with the propulsion shaft, the propulsion device is set to the second mode when the third gear is coupled with the propulsion shaft, the third actuator operates the clutch unit.

17. The outboard motor as set forth in Claim 1, wherein the bracket assembly further supports the drive unit for pivotal movement about a tilt axis that extends generally horizontally, additionally comprising a fourth actuator arranged to tilt the drive unit between first and second trim positions, a second operating device configured to generate a fourth control command corresponding to a specific trim position between the first and second trim positions, the second operating device having multiple physical positions, the control device further controls the fourth actuator based upon the fourth control command.

18. The outboard motor as set forth in Claim 17, wherein the second operating device is disposed on the bracket assembly.

19. The outboard motor as set forth in Claim 17 additionally comprising a first sensor configured to sense an actual regulating position of the regulating device, a second sensor configured to sense an actual output of the prime mover, and a third sensor configured to sense an actual proceeding speed of the outboard motor, the control device automatically controlling the fourth actuator based upon at least one of signals from the first, second and third sensors without the fourth control command.

20. The outboard motor as set forth in Claim 19 additionally comprising a switch configured to change a first control mode using the fourth control command to a second mode using at least one of signals from the first, second and third sensors without the fourth control command and vice versa.

21. The outboard motor as set forth in Claim 20, wherein the second operating device acts as the switch when the second operating device takes one of the multiple physical positions.

22. The outboard motor as set forth in Claim 1, wherein the bracket assembly further supports the drive unit for pivotal movement about a tilt axis that extends generally horizontally, additionally comprising a fourth actuator arranged to tilt the drive unit between first and second trim positions, a first sensor configured to sense an actual regulating position of the regulating device, a second sensor configured to sense an actual output of the prime mover, and a third sensor configured to sense an actual proceeding speed of the outboard motor, the control device controlling the fourth actuator based upon at least one of signals from the first, second and third sensors.

23. An outboard motor comprising a drive unit that has a prime mover and a propulsion device powered by output of the prime mover, a supporting device adapted to support the drive unit on an associated watercraft for steering movement, a regulating device arranged to move between first and second regulating positions so as to regulate the output of the prime mover, a transmission arranged to move between first and second shift positions so as to set the propulsion device to either first or second mode, a first actuator arranged to move the drive unit between the first and second steering positions, a second actuator arranged to move the regulating device between the first and second regulating positions, a third actuator arranged to move the transmission between the first and second shift positions, an operating device configured to generate a first control command corresponding to a specific steering position between the first and second steering positions, a second control command corresponding to a specific regulating position between the first and second regulating positions and a third control command corresponding to either the first or second shift position, the operating device moving right and left and back and forth, a right and left movement of the operating device generating the first command, a back and forth movement of the operating device generating the third command, and an amount of the back and forth movement generating the second command, and a control device configured to control the first, second and third actuators based upon the first, second and third commands, respectively.

24. An outboard motor comprising a drive unit and a bracket assembly arranged to support the drive unit for pivotal movement about a tilt axis that extends generally horizontally, the drive unit comprising a prime mover, a propulsion device powered by output of the prime mover, a regulating device arranged to move between first and second regulating positions so as to regulate the output of the prime mover, an actuator arranged to tilt the drive unit between first and second trim positions, a first sensor configured to sense an actual regulating position of the regulating device, a second sensor configured to sense an actual output of the prime mover, a third sensor configured to sense an actual proceeding speed of the outboard motor, and a control device controlling the actuator based upon at least one of signals from the first, second and third sensors.

25. The outboard motor as set forth in Claim 24, wherein the prime mover is an internal combustion engine, the regulating device is a throttle valve that regulates an

amount of air to a combustion chamber of the engine, the first sensor senses an actual throttle valve position, the second sensor senses an actual engine speed of the engine.

26. An outboard motor comprising a drive unit that has a prime mover and a propulsion device powered by output of the prime mover, a supporting device adapted to support the drive unit on an associated watercraft for steering movement, means for changing the output of the prime mover, means for changing a propulsion mode of the propulsion device, means for steering the drive unit, means for generating control commands for the prime mover output changing means, the propulsion mode changing means and the steering means in response to physical positions of a single member, and means for controlling the prime mover output changing means, the propulsion mode changing means and the steering means based upon the control commands.

27. A method for controlling an outboard motor that has a steerable drive unit and a single operating member, the drive unit having a prime mover and a propulsion device powered by the prime mover, comprising generating a first control command that provides a steering position of the drive unit at a first position of the operating member, generating a second control command that provides a magnitude of output of the prime mover at a second position of the operating member, generating a third control command that provides a propulsion mode of the propulsion device at a third position of the operating member, steering the drive unit based upon the first control command, controlling the output of the prime mover based upon the second control command, and setting the propulsion mode of the propulsion device based upon the third control command.

28. The method as set forth in Claim 27 additionally comprising moving the operating member right and left to generate the first control command.

29. The method as set forth in Claim 27 additionally comprising moving the operating member back and forth to generate the second and third control commands.

30. An outboard motor comprising a drive unit that has a prime mover and a propulsion device powered by output of the prime mover, a supporting device adapted to support the drive unit on an associated watercraft for tilt movement, means for regulating the output of the prime mover, means for tilting the drive unit, means for sensing at least a regulating condition of the regulating means, the output of the prime mover, and a proceeding speed of the outboard motor, and means for controlling the tilting means based upon a result of sensing by the sensing means.

31. A method for controlling an outboard motor that has a tiltable drive unit, the drive unit having a prime mover and a propulsion device powered by the prime mover, comprising regulating output of the prime mover, sensing a magnitude of the regulation, sensing the output of the prime mover, sensing a speed of the outboard motor, and tilting the drive unit based upon at least one of the sensed magnitude of the regulation, the sensed output of the prime mover and the sensed speed of the outboard motor.